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EFFECT OF HYDROPHOBICITY ON THE ADHESION OF LISTERIA MONOCYTOGENES TO STAINLESS STEEL AND POLYPROPYLENE

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The retention of bacteria on food processing surfaces increases the risk of cross-contamination of these microorganisms in food. *Listeria monocytogenes* is a foodborne pathogen of significant concern in the food industry. This bacteria occurs widely in the environment and has been isolated from a range of sources including vegetables, processed foods, silage and soil (Cox *et al.*, 1989). It is well known that initial bacterial adhesion to a surface is determinant to surface colonization. Surface properties as hydrophobicity, electrical charge, roughness and porosity, are determinant in the adhesion process. The aim of this study was to investigate the effect of hydrophobicity in the adhesion of *Listeria monocytogenes* ATCC 15313 to stainless steel (SS) and to polypropylene (PP), which are materials commonly used in domestic kitchens as well as in all the food industry. Adhesion assays were conducted by incubating coupons of the materials studied with a cellular suspension of 1.74×10^8cells/ml, for 2 hours at 25 ºC. After washing, the coupons were stained with a 0.01% DAPI solution and observed by epifluorescence microscopy. The adhered cells were counted using an automate enumeration software. The hydrophobicity of bacteria and materials was determined through contact angle measurements. Both materials are hydrophobic, being stainless steel the most hydrophobic one. *L. monocytogenes* is hydrophilic. Probably, this explains the higher adhesion of *L. monocytogenes* to SS (3.63×10^6 cells/cm^2) than to PP (2.7×10^5 cells/cm^2). On the basis of these results, optimisation of disinfection procedures or the use of other materials in order to reduce adhesion is recommended.

Cox L.J., Kleiss, T., Cordier J.L. *Food Microbiology*, 6, 49-61, (1989).